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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/585,491

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Simon Davis

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EXAMINER

NOAKES, SUZANNE MARIE

ART UNIT

PAPER NUMBER

1656

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/585,491	Applicant(s) DAVIS, SIMON	
	Examiner SUZANNE M. NOAKES	Art Unit 1656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 36-61 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 36-61 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 36(a) and 37-43, drawn to an isolated antibody that induces superagonistic signaling by a cell surface receptor.

Group II, claim(s) 36(b) and 37-43, drawn to an isolated chimeric protein that induces superagonistic signaling by a cell surface receptor, which chimeric protein comprises an amino acid sequence comprising a fragment of a ligand of the receptor and an Fc region of an antibody.

Group III, claim(s) 36 (c) and 37-43, drawn to an isolated chimeric protein that induces superagonistic signaling by one or two types of cell surface receptor, said chimeric protein comprising two Fv regions of an antibody that may be the same or different.

Group IV, claim(s) 36(d) and 37-43, drawn to an isolated peptide of 5-20 amino acids that binds to an antibody that induces superagonistic signaling by a cell surface receptor.

Group V, claim(s) 36(e) and 37-43, drawn to an isolated peptide of 5-20 amino acids that binds to an isolated chimeric protein that induces superagonistic signaling by a cell surface receptor, which chimeric protein comprises an amino acid sequence comprising a fragment of a ligand of the receptor and an Fc region of an antibody

Group VI, claim(s) 36(f) and 37-43, drawn to an isolated peptide of 5-20 amino acids that binds an isolated chimeric protein that induces superagonistic signaling by one or two types of cell surface receptor, said chimeric protein comprising two Fv regions of an antibody that may be the same or different.

Group VII, claim(s) 36(e)-36(f) and 54-58, drawn to a crystal of CD28 (or fragment, homologue thereof), or a complex of said CD28 bound to an antibody or one which has the structural coordinates of Table 4 and methods of making said crystals.

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Group VIII, claim(s) 36(h), drawn to machine readable storage medium comprising data capable of displaying the three-dimensional structure of CD28 (or fragment, homologue thereof), or a complex of said CD28 bound to an antibody or one which has the structural coordinates of Table 4.

Group IX, claim(s) 36(i), drawn to a computer program product comprising a program code means stored on a computer readable storage medium for comparing a structural model of a candidate modulator with a structural model of CD28.

Group X, claim(s) 44-53, drawn to a method of identifying a candidate modulator or agent that modulates a receptor - ** This Group further requires an election of species (see below) **.

Group XI, claim(s) 59(i), drawn to a method of modulating an immune response of a patient or of inducing superagonistic signaling by a receptor by administering a modulator or CD28.

Group XII, claim(s) 59(ii) antibody, drawn to a method of modulating an immune response of a patient or of inducing superagonistic signaling by a receptor by administering an antibody that induces superagonistic signaling.

Group XIII, claim(s) 59(ii) chimeric protein, drawn to a method of modulating an immune response of a patient or of inducing superagonistic signaling by a receptor by a chimeric protein that induces superagonistic signaling.

Group XIV, claim(s) 59(iii), drawn to a method of modulating an immune response of a patient or of inducing superagonistic signaling by a receptor by administering an agent that binds to a membrane proximal extracellular region of the receptor.

Group XV, claim(s) 59(iv), drawn to a method of modulating an immune response of a patient or of inducing superagonistic signaling by a receptor by administering a peptide that stimulates and antibody response in the patient.

Group XVI, claim(s) 59(v) – encoding a modulator of CD28, drawn to a method of modulating an immune response of a patient or of inducing superagonistic signaling by a receptor by administering a nucleic acid that encodes a modulator of CD28.

Group XVII, claim(s) 59(v) – encoding an antibody, drawn to a method of modulating an immune response of a patient or of inducing superagonistic signaling by a receptor by administering a nucleic acid that encodes an antibody that induces superagonistic signaling.

Group XVIII, claim(s) 59(v) – encoding a chimeric protein, drawn to a method of modulating an immune response of a patient or of inducing superagonistic signaling by

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a receptor by administering a nucleic acid that encodes a chimeric protein that induces superagonistic signaling.

Group XIX, claim(s) 59(v) – encoding an agent that binds proximal to, drawn to a method of modulating an immune response of a patient or of inducing superagonistic signaling by a receptor by administering a nucleic acid that encodes an agent that binds to a membrane proximal extracellular region of the receptor.

Group XX, claim(s) 59(v) – encoding a peptide, drawn to a method of modulating an immune response of a patient or of inducing superagonistic signaling by a receptor by administering a nucleic acid that encodes a peptide that stimulates and antibody response in the patient.

Group XXI, claim(s) 59(vi), drawn to a method of modulating an immune response of a patient or of inducing superagonistic signaling by a receptor by administering an agent or modulator to patient that inhibits contact between phosphatase of the cell and the receptor.

Group XXII, claim(s) 60(i), 61(i) and 61(iii), drawn to a method of obtaining a superagonistic antibody by screening antibodies for their ability to induce superagonistic signaling by a receptor by immunizing an animal with said receptor or a homologue or fragment thereof.

Group XXIII, claim(s) 60(ii), 61(ii) and 61(iii),), drawn to a method of obtaining a superagonistic antibody by screening antibodies for their ability to induce superagonistic signaling by screening antibodies produced in a combinatorial library.

2. The inventions listed as Groups I-XXIII do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: Claim 44(a), which is interpreted as taking place either *in vitro* or *in silico*, is drawn to a method of identifying a candidate modulator agent that modulates a receptor by determining whether a candidate agent binds to a membrane proximal extracellular region of the receptor to determine whether the candidate agent is capable of superagonizing the receptor.

Hunig et al. (US 20030166860) teach the following:

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[0033] The peptide, protein according to the invention or a mimicry compound thereto according to the invention can be used in a method for producing mAbs which superagonistically modulate the proliferation of T cells of several to all sub-groups, a non-human mammal being immunized with the protein or peptide or the mimicry compound thereto, from the non-human mammal cells being taken, hybridoma cells being produced from the cells, and such obtained hybridoma cells being selected, the culture supernatant of which contains mAbs, which bind to the C'-D loop of the protein or peptide or the mimicry compound thereto, such hybridoma cells and mAbs obtainable with such hybridoma cells. Human mAbs according to the invention can alternatively however also be produced by that B lymphocytes are selected which bind to the loop, and that their expressed immunoglobulin genes are cloned. Furthermore, human mAbs can be isolated from phage libraries. The average man skilled in the art is without any problems in a position, using his knowledge, to execute such alternative methods, so that no detailed description is needed here.

[0034] By using the invention, new superagonistic CD28 family specific mAbs and/or mimicry compounds can however also be identified. Therefore the invention also relates to the use of a peptide, of a protein according to the invention or of a mimicry compound thereto according to the invention in a screening method for the identification of substances superagonistically modulating the proliferation of T cells of several to all sub-groups, a prospective substance or a mixture of prospective substances being subjected to a binding assay with the peptide or protein or mimicry compound thereto, and substances binding to the peptide or protein or mimicry compound thereto being selected. In principle, any conventional binding assay can be used. Of special importance may be here the search for mimicry compounds, since these are typically so-called small molecules having pharmacological advantages over macromolecules. In such a screening method for mimicry compounds, a substance library can be screened with high throughput. Both aforementioned uses may be carried out with a native CD 28 receptor family member as well.

Thus, Hunig et al. teach the limitations of claim 44(a). Therefore, the technical feature linking the inventions of Groups I-XXIII does not constitute a special technical feature as defined by PCT Rule 13.2, as it does not differentiate the claimed subject matter as a whole over the prior art. Since according to PCT Rule 13.2 the presence of such a common or corresponding special technical feature is an absolute prerequisite for unity to be established, and given that there does not appear to be any other technical feature common to the claimed subject matter as a whole which might be able

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to fulfill this role, the currently claimed subject matter lacks unity of invention according to PCT Rule 13.1.

Elections of Species – Pertaining to Group X

3. No claims of this group are generic to the following disclosed patentably distinct species: A) The receptors listed in claim 44 as species (i)-(vii).

i) Furthermore, if species (vi) is elected, a further election of species is required wherein Applicants are to choose a receptor from those listed in Table 2.

The species are independent or distinct because as disclosed the different species have mutually exclusive characteristics for each identified species. In addition, these species are not obvious variants of each other based on the current record.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable.

There is an examination and search burden for these patentably distinct species due to their mutually exclusive characteristics. The species require a different field of search (e.g., searching different classes/subclasses or electronic resources, or employing different search queries); and/or the prior art applicable to one species would not likely be applicable to another species; and/or the species are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species to be examined even though the requirement may be traversed (37 CFR 1.143) **and (ii) identification of the claims encompassing the elected species**, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

The election of the species may be made with or without traverse. To preserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the election of species requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable on the elected species.

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the species unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other species.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which depend from or otherwise require all the limitations of an allowable generic claim as provided by 37 CFR 1.141.

4. Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species or invention to be examined even though the requirement may be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention or species may be made with or without traverse. To preserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse.

Potential Right to Rejoinder

5. The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SUZANNE M. NOAKES whose telephone number is (571)272-2924. The examiner can normally be reached on 7.00 AM-3.30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Wang can be reached on 571-272-0811. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SUZANNE M. NOAKES/
Primary Examiner, Art Unit 1656
08 May 2009